

## THE THORACIC STRUCTURE OF WORKER ANTS OF THE GENUS PHEIDOLOGETON.

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The worker caste of many of the species of *Pheidologeton* is made up of a polymorphic group of individuals varying considerably in size and structure. According to their size these workers arbitrarily are divided into three groups and referred to as major, media and minor forms. In some species the intermediate forms are absent and the major forms are called soldiers and the minor forms are referred to as the workers. In the development of a colony established by a single queen the first brood always consists of minor forms whereas the succeeding broods may contain the larger forms. Queens do not appear until after the largest workers have been produced which may be a matter of four to six years. Similar slow successions of small workers, large workers and queens have been noted in *Atta*, *Pheidole*, and *Camponotus*. This phenomenon is a constant one in species with polymorphic workers and has been interpreted by some as being dependent upon the gradual improvement in the trophic status of the ant colony. It has been presented as an argument in support of the trophogenic hypothesis of caste determination.

Continuous series of forms from the major to minor workers may be arranged within these polymorphic species. Except for size the composition of the head and abdomen remains essentially the same throughout the series but in the thorax it is possible to note differences in the composition of the sclerites. A consideration of these thoracic changes as found in *Pheidologeton diversus* subsp. *philippensis* is given here. The specimens of this series were studied in a liquid medium with the aid of a binocular microscope. The scale drawings were made with the aid of a cross-line ocular micrometer disc and graph paper. The specimens were made available through the generosity of the late Professor William M. Wheeler.

The thorax of the major worker of *P. diversus* (Fig. 1) although only one-third as large as that of the winged queen exhibits many of the regions and sutures of the winged thorax. The scutellum (SCM) is prominent projecting from the posterior portion of the mesonotum (MSN). The prescutellum (PRS) is recognizable in its dorsal region as an inverted V-shaped area; ventrally it is fused with the mesopleuron. The metanotum (MTN) is present as a conspicuous area posterior to the scutellum. Due to the absence of

wings and wing insertions a fusion of the notal and pleural regions has taken place both in the meso- and metathorax although in the mesothorax the line of fusion is indicated by a ridge (A). The media workers show various transitional stages (Figs. 2, 3, 4) toward the minor worker (Fig. 5) and the following changes may be noted.

1. Disappearance of the prescutellum and the ridge between the mesonotum and mesopleuron; the fusion of the metanotum and the propodeum (Fig. 2).
2. Disappearance of the metanotum and the episternal suture; the fusion of the pro- and mesonotum (Fig. 3).
3. Disappearance of the scutellum (Fig. 4).

Although the series described above exhibits continuous gradations between the large and the small workers there is an absence of any forms connecting the queen and the worker, *i.e.*, between the winged and wingless female. This absence of forms bridging the gap between the large workers and the queens would appear to weaken the hypothesis that the castes of *Pheidologeton* are trophogenically determined.

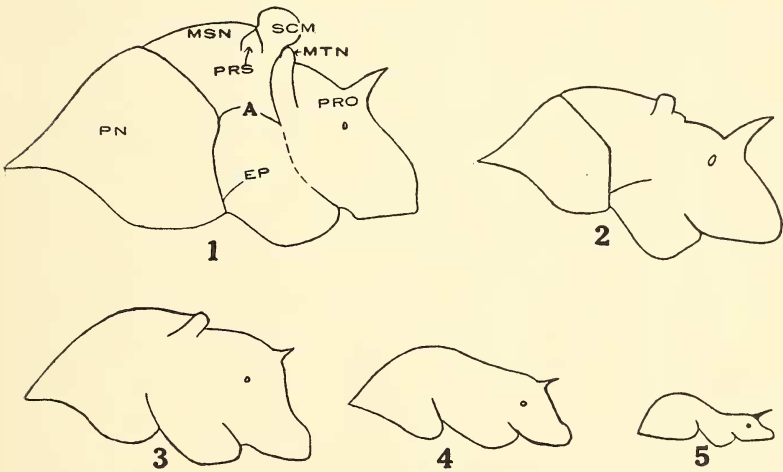


FIG. 1. Thorax of major worker of *P. diversus*. A = mesonotal-mesopleural ridge; EP = episternal suture; MSN = mesonotum; MTN = metanotum; PN = pronotum; PRO = propodeum; PRS = prescutellum; SCM = scutellum. Figs. 2, 3, 4. Thoraxes of media workers. Fig. 5. Thorax of minor worker.